Sponge-Jet® Sponge Blasting System

Sponge-Jet Media Recycler User Manual

Model:

Pneumatic Recycler

35-P

235 Heritage Avenue, Suite 2

Portsmouth, NH 03801

tel (US): (603)431-6435

tel (EU): +44 (0) 1253-390731

www.spongejet.com

1.0 Introduction

The Pneumatic Media Recycler™ separates large and small foreign matter from reusable Sponge Media™ abrasives. A specially weighted, rotating spindle, oscillates spent Sponge Media abrasives and surface contaminants through two screens and classifies the materials for separate collection.

Designed for industrial durability, the Pneumatic Media Classifier can process up to **800** pounds (350 kgs) of foreign matter and Sponge Media abrasives per hour.

Inspection of the Pneumatic Media Classifier will reveal it to be of relatively simple design. As a result, few parts are subject to wear under normal operating conditions.

Note: During operation, the **Lower Base Assembly (Fig. C, #6)** experiences very little vibration. This base supports the **Vibratory Portion (Fig. C, #7)** and the **Sieve Assembly (Fig. A)** of the Pneumatic Media Classifier and is mounted on a cross frame with four lockable casters.

The Pneumatic Media Classifier is powered by an air-operated motor. Energy is directly transmitted through the flywheel shaft.

The **Sieve Assembly (Fig. A)** of the Pneumatic Media Classifier sits inside the **Vibratory Portion (Fig. C, #7)** and is secured by four (4) heavy-duty clamps, called **Pan Clamps (Fig. D)**. The entire **Sieve Assembly** and **Vibratory Portion** is isolated from the **Lower Base Assembly** by three (3) **Suspension Rods (Fig. C, #5)** and consists of the following (illustrated in Fig. A): Feeding Ring/Hopper, Screens mounted to Stainless Steel Ring/Clips, Flat Gaskets, Double Deck Main Rim, Shallow Funnel and Media Downspouts.

In the center of the **Vibratory Portion** is an eccentric Flywheel **(Fig. C, #4)**. The vibratory energy generated directly by this **Flywheel** is transmitted to the **Sieve Assembly**. Beneath the flywheel housing and located on the lower end of the shaft is an adjustable eccentric weight. When this weight rotates, the upper eccentric **Flywheel** causes the media to move across the screen in a horizontal direction.

Unpacking Instructions

- Before uncrating the Pneumatic Media Classifier, please review the packing list. If there are any discrepancies, please notify your Sponge-Jet Distributor, Representative or Sponge-Jet, Inc., at 207-439-0211 or (in the USA) 800-776-6435. In Europe, please call +44(0) 1253-390731.
- Examine all screens and components to insure damage has not occurred during shipment.
- Operate the Pneumatic Media Classifier on a sturdy, flat surface. This will assure maximum efficiency.
- Vibrating parts should **never** come in contact with the static parts of the machine or its surroundings.
- Check to be sure the screen elements are level.

2.0 Media Classification

IMPORTANT: It would be difficult to overemphasize the importance of separating oversize and undersize particles from reusable Sponge Media abrasive. Proper separation is critical to reducing airborne dust and minimizing the risk of clogging the Sponge-Jet Feed Unit™ while blasting.

The Media Classification Process In Brief:

1. After connecting the Pneumatic Media Classifier to an adequate air supply (see section 3.0). Activate the Pneumatic Media Classifier by opening the **Air Inlet Valve (Fig. B, #4)**.
2. Before re-use Sponge Media abrasive is added through the **Feeding Ring/Hopper (Fig. A, #1)** located on the top of the Pneumatic Media Classifier.
3. Reusable Sponge Media abrasive and small contaminants pass through the **Top Screen (Fig. A, #6)**. Oversize particles do not pass through the top screen, but are carried out of the **Large Particle Downspout (Fig. A, #8)**.
4. Sponge Media abrasive and any remaining contaminants pass down to the **Bottom Screen (Fig. A, #7)** where reusable Sponge Media abrasive is carried over the bottom screen and exits the Pneumatic Media Classifier via the **Reusable Media Downspout (Fig. A, #9)**. Smaller contaminants and spent media abrasives fall below the **Bottom Screen** as undersized particles and are ejected through the **Fine Particle Downspout (Fig. A, #4)**.

2.1 Top Screen - Large Particle Classification

The **Top Screen (Fig. A, #6)** is a stainless steel, standard #3* mesh screen used to separate unwanted foreign matter larger than a particle of Sponge Media abrasive. Items such as nuts, bolts or rocks are separated and discharged as oversized particles through the **Large Particle Downspout (Fig. A, #8)**.

WARNING: Oversize particles, if re-introduced back into the Working Mix, can be damaging as they could (1) become a projectile capable of injuring people, (2) harm the work surface, (3) pierce a pressurized blast hose, (4) clog the Feed Unit and/or (5) damage or jam the drive mechanism.

2.2 Reusable Media

Sponge Media abrasives that do not pass through the **Bottom Screen** exit the Pneumatic Media Classifier via the **Reusable Media Downspout (Fig. A, #9)**. Sponge Media abrasive that exits this downspout can be reused in the Sponge-Jet Feed Unit.

2.3 Bottom Screen - Fine Particle Classification

The **Bottom Screen (Fig. A, #7)** is a stainless steel, number #16* mesh screen used to separate foreign matter smaller than most Sponge Media particles. Fine particles are separated from Sponge Media and discharged through the **Fine Particle Downspout (Fig. A, #4)** as undersize particles and are normally considered waste. Fine particles usually include paint chips, broken down ("spent") abrasive and separated urethane particles. These fine particles, if reintroduced to the Sponge Media abrasive Working Mix, will increase ambient dust levels at the work site.

Important: The acceptability of increased dust levels is usually established within the responsibilities of each project superintendent. Usually undersize particles are considered waste. Hazardous materials such as, but not limited to, lead paint, chromates, radioneuclides, cadmium, or PCB's can present special demands upon the user to manage the waste stream according to best practices and all applicable regulations.

***The standard size for the Top Screen is #3, the Bottom Screen is #16, unless other sizes are specified or provided for differing throughput or particle size distribution.**

- With reasonable care and maintenance, the Pneumatic Media Classifier is a reliable, efficient part of the Sponge Blasting™ System. Questions that arise may be addressed to Sponge-Jet, Inc.'s 24-Hour Technical Support, at 207-439-0211 or (in the USA) 800-776-6435. In Europe, please call +44(0) 1253-390731.

3.0 Air Requirements

Compressed air is the source of energy for the Pneumatic Media Classifier, allowing it to be used independent of electric power.

Sponge-Jet requires a minimum of 35cfm (1 m^3/min) with a factory set pressure limit not to exceed 30psi (2 Bar).

An **Air Filter (Fig. B, #1)** provided on the inlet side of the Pneumatic Media Classifier is intended to protect the **Air Motor (Fig. C, #3)** and **Regulator (Fig. B, #2)** from damage due to dirty or wet air, which can cause irrevocable damage to those parts.

4.0 Normal Operation

4.1 Feed Connections

IMPORTANT: It is essential not to restrict the movement of the vibrating portion of the machine. It is recommended that no rigid connections be added to the inlet/outlet of the Pneumatic Media Classifier. Rigid connections can reduce the efficiency of the Pneumatic Media Classifier and lead to early fatigue of the sheet metal parts and weldments.

4.2 Adjustment of Pan Clamps

The **Pan Clamps (Fig. D)** have a simple adjustment that allows for different thickness **Flat Gaskets (Fig. A, #5).**

Adjustment is made by turning the **Steel Hook Top (Fig. D, #4).** Under normal operation, adjustment should not be necessary if all pans and gaskets are in the proper location. Pressure required to close the four (4) **Pan Clamps** should not exceed five (5) pounds each at the end of the lever **Handle (Fig. D, #1)**. A **Lock Nut (Fig. D, #3)** behind the **Steel Hook Top** should be tightened just enough to prevent the **Steel Hook Top** from turning when dismounting portions of the **Sieve Assembly**.

WARNING: DO NOT APPLY EXCESSIVE FORCE WHILE TIGHTENING THESE CLAMPS. THE VIBRATION OF THE CLASSIFIER WILL CAUSE THE OVERTIGHTENED CLAMPS TO BREAK.

4.3 Filling the Pneumatic Media Classifier

Sponge Media abrasive is added through the **Feeding Ring/Hopper (Fig. A, #1)** located on the top of the Pneumatic Media Classifier.

After connecting the Pneumatic Media Classifier to an adequate air supply (see section 3.0), activate the Pneumatic Media Classifier by opening the **Air Inlet Valve (Fig. B, #4**). A powerful gyrating vibration should occur in a horizontal plane.

5.0 Advanced Operation

Important: Before operation, **if any substantial disassembly has occurred to the Pneumatic Media Classifier**, it is important to verify the following has been completed:

5.1 Amplitude of Vibration

Adjustment during the use of the machine should be kept to a minimum. The one variable with which the operator should be concerned is the amplitude of vibration. The Pneumatic Media Classifier has one (1) **Flywheel (Fig. C, #4)**, which is adjustable to five (5) varying degrees of "off-center". This adjustment will modify horizontal amplitude. Located below the **Flywheel** housing (on the flywheel shaft) is an adjustable weight. When the weight is set off center from the upper flywheel weight, varying amounts of vertical deflection occur. This deflection is also a function of the RPM from the **Flywheel**.

5.2 Procedure for Adjustment of Amplitude

Adjust the **Flywheel** as follows:

1. Remove the **Sieve Assembly** to expose the top bearing housing bracket.
2. In the bracket there will be a ½" "thru-hole". Rotate the **Flywheel** until the ½" socket head cap screw comes into view. Amplitude setting numbers will range from 1 to 3.
3. Remove this screw until **Flywheel** slide weight can be rotated to the desired setting number.
4. Tighten the screw securely.

A second adjustment is available by moving the kicker weight. To adjust the kicker weight, remove the **Side Cover (Fig. C, #2)**. The kicker weight is located directly above the upper coupling flange. One (1) bolt holds the fan shaped weight to the shaft by a squeeze fit. This weight is set by the factory at zero degrees with flywheel weights. To achieve maximum amplitude, loosen with a 5/16" Allen wrench and rotate the weight 180 degrees and tighten. Settings between 0 degrees and 180 degrees may achieve best production for different products.

NOTE: The amplitude setting of the Pneumatic Media Classifier, with the flywheel shaft running at 3450RPM, should not exceed flywheel setting #3, which is factory set. Adjustment requires the use of a RPM calibration tool.

WARNING: Failure to use a calibration tool or properly set the RPM rate can damage the equipment and will void the warranty.

5.3 Alignment

Prior to shipment this Pneumatic Media Classifier has been adjusted for efficient operation. Under normal operating conditions, these settings should not need attention. However, shocks can occur during shipment, which may necessitate some slight re-alignment. Efficient operation results when the motor and the flywheel shaft are parallel. When this occurs, the faces of the flywheel Upper Coupling Flange and the motor flange are also parallel.

If uneven vibrating or jerking occurs, determine that the coupling faces are parallel by measurement. If they are not parallel, adjust by varying the length of the three (3) **Suspension Rods (Fig. C, #5).** This operation is performed by loosening and screwing up or down the three (3) pairs of hexagon nuts. Secure the base of the **Suspension Rods** and the lower compressed rubber bushings. After adjustment is made, these nuts must be securely tightened. At the same time, check to be sure the faces of the flanges remain parallel.

5.4 Alignment of Flanges

A minimum clearance of 1 ¼" (32 mm) must be maintained between the faces of the Coupling Flanges. The Coupling Flanges must be held parallel to within .010". Parallel alignment of the flange is performed by adjusting the three (3) lower **Suspension Rod** nuts. After the coupling flanges are proven to be parallel, installation of the flexible rubber coupling may proceed.

NOTE: The flexible rubber coupling is 1" (24.5 mm) thick with four (4) 1/8" (3.2 mm) thick bosses.

WARNING: Never run the motor with only the flexible rubber coupling attached to the motor flange. Failure to observe this precaution may result in serious damage and/or injury.

5.5 Sieve Assembly

The dismountable **Sieve Assembly (Fig. A)** is constructed of stainless steel. When it is correctly assembled and fastened, the rim weldments should be durable. Failure to properly assemble and fasten the **Sieve Assembly** will sharply shorten the life of the weldments.

The **Sieve Assembly** consists of five parts. Assemble as follows:

1. Place the **Fine Particle Downspout (Fig. A, #4)** through the hole provided in the **Vibratory Portion (Fig. C, #7). Note**: Be sure the downspout is centered.
2. Place a **Flat Gasket (Fig. A, #5)** into the **Shallow Funnel (Fig. A, #10).**
3. Place the **Stainless Steel Ring/Clip (Fig. A, #2)** with the #16* mesh screen attached, **(Important Place mesh screen up**)** into the **Shallow Funnel** and on top of the **Flat Gasket**.

4. Place a **Flat Gasket** onto the **Stainless Steel Ring/Clip** making sure to center the **Flat Gasket**.
5. Place the **Double Deck Main Rim (Fig. A, #3)** over the **Flat Gasket** and **Stainless Steel Ring/Clip** and into the **Shallow Funnel**.
6. Place a **Flat Gasket** into the **Double Deck Main Rim**.
7. Place the **Stainless Steel Ring/Clip** with the #3* mesh screen attached, **(IMPORTANT: Place mesh screen side up**)** into the **Double Deck Main Rim** and on top of the **Flat Gasket**.
8. Place a **Flat Gasket** onto the **Stainless Steel Ring/Clip**, making sure to center the **Flat Gasket**.
9. Place the **Feeding Ring/Hopper** over the **Flat Gasket**, making sure that the **Large Particle Downspout (Fig. A, #8)** is opposite from the **Reusable Media Downspout (Fig. A, #9).**
10. Attach the **Pan Clamps. (Fig. D)** These must be closed to secure the **Sieve Assembly**.

***The standard size for the Top Screen is #3, the Bottom Screen is #16, unless other sizes are specified or provided for differing throughput or particle size distribution.**

****IMPORTANT: All screens must be assembled with mesh on the top. Incorrect fitting is an easy mistake and will cause the Pneumatic Media Classifier to operate unsatisfactorily.**

6.0 Routine Maintenance

IMPORTANT: Under **NO** circumstances should any inspection, adjustment or lubrication be conducted while the Pneumatic Media Classifier is running or connected to an air supply.

6.1 Lubrication

Pneumatic Media Classifiers have been tested before shipment. **DO NOT** grease this Pneumatic Media Classifier until it has been operated for 500 hours. Re-lubricate using ½ pump or small amount every 500 hours of operation. **DO NOT OVERGREASE**.

Recommended Lubricants are:

1. Citco AP, Citco oil
2. Ore-Lube K2
3. Mobilux Grease #2, Socony Mobil Oil Co.
4. Val-Lith #IP, Valvoline Co.
5. VS SGA, MM Industries, Inc.
6. Multifak #2, Texaco Inc.
7. Alvanie R#, Shell Oil Co.

WARNING: DO NOT FORCE EXCESSIVE GREASE. Damage could occur to the bearings and air motor system.

6.2 Access to Grease Fittings

1. The two (2) bearings are greased by access through the grease fittings on the side of the machine.

IMPORTANT: If the machine has not been used for one year, add 1 to 2 pumps of grease.

6.3 The Lubricator

It is important to check the levels of the oil in the **Lubricator (Fig. B, #3).** If necessary refill with Pneumatic Hand Tool Oil. Refill by unscrewing the bottom portion of the lubricator, being careful not to spill the remaining oil.

IMPORTANT: If any undue noise is detected, please notify the Operator or Maintenance Personnel. For inspection the Pneumatic Media Classifier should be immediately switched off and all revolving parts should stop before any investigations are carried out.

7.0 Rebuild Maintenance

7.1 Replacement of Top Roller Bearing

1. Remove the **Sieve Assembly**.
2. Remove grease lines.
3. Remove ring (6) 5/16" hex head cap screws, top bearing housing cap and brass mole connector.
4. Remove top bearing housing with bearing.
5. Loosen the top bearing sleeve bolt.
6. Carefully press bearings and seal out of housing and top bearing sleeve.
7. Clean and deburr housing and sleeve - examine parts for wear.
8. Press new bearing and seal into sieve and housing.
   IMPORTANT: Re-pack bearing with grease (See recommended lubricants).
9. Replace top bearing sleeve and sleeve bolt.
   IMPORTANT: Use thread locker on sleeve bolt (Perma Lok MM115 or equal).
10. Insert top housing cap and 5/16" hex head cap screws.
11. Reattach grease lines.

7.2 Replacement of Flywheel Bearing

1. Remove **Sieve Assembly** .
2. Release **Side Cover** clamp and open cover.
3. Loosen and remove top two (2) flexible rubber coupling locknuts (3/8" - 16 thread).
4. Remove three (3) 5/8-11 hex nuts from **Suspension Rods** above rubber bushings.
5. Remove top sieve weldment.
6. Follow steps 1 through 6 of "Replacement of Top Roller Bearing" (If not already complete).
7. Loosen two (2) 3/8-16 set screws - Remove **Flywheel**.
8. Loosen ten (10) 3/8-16 set screws.
9. Loosen one (1) 7/16" hex head cap screws from ends of shaft - Loosen two (2) 3/8-16 socket head cap screws - Remove upper coupling flange.
10. Remove ten (10) 3/8-16 socket head cap screws and grease line.
11. Remove flywheel housing from top sieve weldment.

12. Loosen ¼" cap screws - remove **Flywheel** top cap and bottom cap.
13. Slide **Flywheel** shaft (with bearings) through bottom of housing.
14. Remove circlip - Press bearing from shaft.

15. Press outside race of roller bearings from flywheel housing.
16. Remove seals from top and bottom caps.
17. Clean and inspect all parts for wear - deburr all parts as required.
18. Follow steps 1 through 16 to in reverse order to reassemble.

IMPORTANT: Follow steps for proper alignment after assembly

FIGURES

Figure A: Sieve Assembly

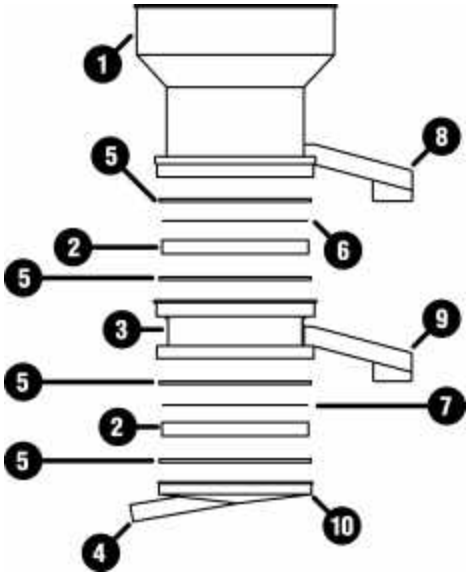


Figure A

1. **Feeding Ring/Hopper**
   Sponge-Jet Media is poured into the Feeding Ring/Hopper located on the top of the Pneumatic Media Classifier for classification.
2. **Stainless Steel/Ring Clip**
   Mesh Screens are mounted to the Stainless Steel Ring/Clips
3. **Double Deck Main Rim**
   Located in the center of the Sieve Assembly, the Reusable Media Downspout is part of this Rim.
4. **Fine Particle Downspout**
   Part of the Shallow Funnel. All particles that fall through the bottom screen are discharged through the Fine Particle Downspout.
5. **Flat Gaskets**
   Four flat buna rubber gaskets.
6. **Top Screen**
   Stainless Steel mesh screen used to separate the oversize items larger than a particle of Sponge Media abrasive from the reusable Sponge Media abrasive.

   (See section 5.5 – Sieve Assembly, for proper screen installation)
7. Bottom Screen
   Stainless Steel mesh screen used to separate undersize material normally considered waste from the reusable Sponge Media abrasive.

   (See section 5.5 – Sieve Assembly, for proper screen installation)
8. **Large Particle Downspout**
   Oversized particles that cannot pass through the top screen are discharged through the Large Particle Downspout.
9. **Reusable Media Downspout**
   Particles that do not fall through the Bottom Screen are discharged through the Reusable Media Downspout.
10. **Shallow Funnel**
    Located under the Bottom Screen, the shallow funnel collects and directs fine particulate into the Fine Particle Downspout.

Figure B: Main Controls

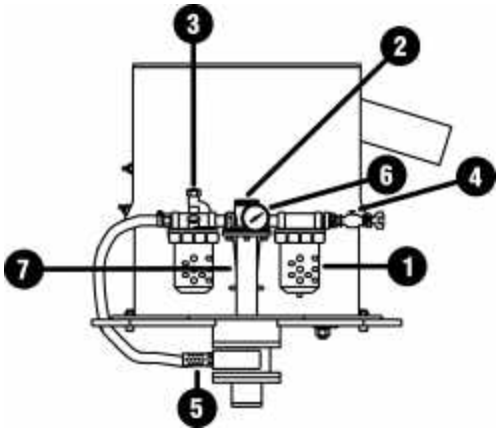


Figure B

1. **Air Filter**
   The Air Filter is intended to protect the Air Motor and Regulator from damage due to dirty or wet air.
2. **Regulator**
   Regulates the airflow.
3. **Lubricator**
   Contains oil used to disburse moisture and lubricate the Air Motor.
4. **Air Inlet Valve**
   The Air Inlet Valve is the main air control valve that starts and stops the airflow to the Pneumatic Media Classifier.
5. **Muffler**
   Located on the Air Motor.
6. **2 ½" Pressure Gauge**
   Measures the output pressure of the Regulator.
7. **Bracket**
   Located on the outside of the housing. This Bracket holds the Filter, Lubricator, Pressure Gauge and Regulator.

Figure C: Vibratory Portion and Lower Base Assembly

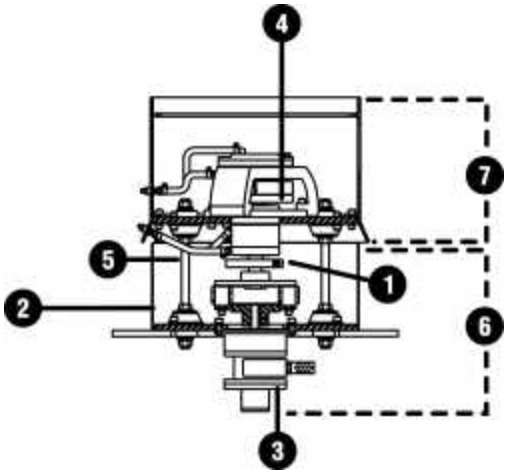
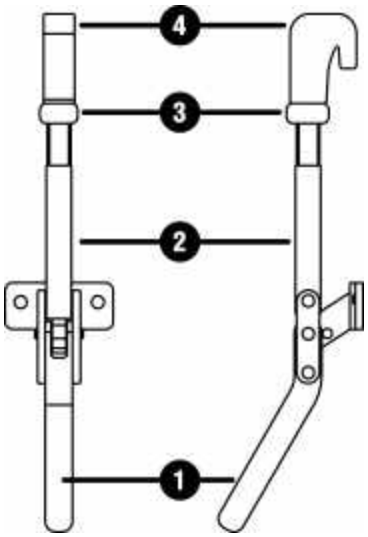


Figure C

1. **Weight**
   This off center weight causes the upper eccentric Flywheel to move media across the screen.
2. **Side Cover**
   This removable cover serves as protection for the components located inside the Lower Base Assembly.
3. **Air Motor**
   The Air Motor powers the Pneumatic Media Classifier.
4. **Flywheel**
   The vibratory energy generated directly by the Flywheel is transmitted to the Sieve Assembly.
5. **Suspension Rods**
   The Sieve Assembly and the Vibratory Portion is isolated from the frame by the three suspension rods.
6. **Lower Base Assembly**
   The Lower Base Assembly supports the Main Controls, Air Motor, Vibratory Portion and the Sieve Assembly.
7. **Vibratory Portion**

   The Vibratory Portion is located over the Lower Base Assembly and supports the Sieve Assembly.

Figure D: Pan Clamps



1. **Handle**
   The lever Handle is used to secure the Pan Clamp to the Sieve Assembly.
2. **Threaded Rod**
   The Steel Hook Top threads onto the Threaded Rod.
3. **Lock Nut**
   The Lock Nut is used to prevent the Steel Hook Top from swiveling when dismounting the Pan Clamps.
4. **Steel Hook Top**
   Adjustment for varying sized gaskets is made by turning the Steel Hook Top.

Figure D

6.0 Specifications

Weight

300 lb. / 136 kilo

Gaskets

One set (4) buna flat gaskets

Clamps

One set (4) double-deck Pan Clamps with Lock Nuts

Screens

One (1) top #3* mesh (.047" wire diameter / .286" open area) stainless steel screen soldered to a ¾" x 1-1/2" high tubular mesh ring (top) and one (1) #16* mesh standard (.018" wire diameter /. 044" open area) stainless steel screen soldered to a ¾" x 1-1/2" high tubular mesh ring.

Stainless Steel Parts

Top: 8" main rim/angle with 6" long oversize chute & finger scroll; Bottom: 15"x3" high deck section with scroll cone (6" op.) and oversize chute.

Motor

GAST air motor Model 6AMNRV1A-4 Vane, reversible

***The standard size for the Top Screen is #3, the Bottom Screen is #16, unless other sizes are specified or provided for differing throughput or particle size distribution.**

- For **24-hour technical service**, contact Sponge-Jet, Inc. Technical Support, at 207-439-0211 or (in the USA) 800-776-6435. In Europe please call 44 (0) 1253-390731.

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